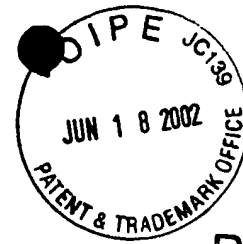


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SEQUENCE LISTING



#6

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JUN 26 2002

TECH CENTER 1600/2900

<110> Stiles, Michael E.  
Vederas, John C.  
van Belkum, Marius J.  
Worobo, Randy W.  
Worobo, Rodney J.  
Greer, G. Gordon  
McMullen, Lynn M.  
Leisner, Jorgen J.  
Poon, Alston  
Franz, Charles M.A.P.

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Asp Leu Gly Ile Leu Val Ile Val Gly Thr Val Leu Val Val Gln Asn  
290 295 300

Ser Thr Leu Phe Leu Ile Ser Leu Ile Ala Ile Pro Ala Tyr Ala Leu  
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Val Val Lys Lys Gly Asp Thr Leu Val Thr Phe Thr Ser Gly Asn Glu  
85 90 95

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145 150 155 160

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165 170 175

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180 185 190

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<210> 16

<211> 227

<212> DNA

<213> Divergicin structural gene;



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<220>

<221> CDS

<222> (1)..(225)

<223>

<400> 16

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ggg	gca	aca	ttt	ttc	tca	aca	cca	caa	caa	gct	tct	gct	gct	gca	ccg	96
Gly	Ala	Thr	Phe	Phe	Ser	Thr	Pro	Gln	Gln	Ala	Ser	Ala	Ala	Ala	Pro	
			20					25					30			

aaa	att	act	caa	aaa	caa	aaa	aat	tgt	ggt	aat	gga	caa	tta	ggt	gga	144
Lys	Ile	Thr	Gln	Lys	Gln	Lys	Asn	Cys	Val	Asn	Gly	Gln	Leu	Gly	Gly	
		35					40					45				

atg	ctt	gct	gga	gct	ttg	ggt	gga	cct	ggc	gga	ggt	gtg	tta	ggt	ggt	192
Met	Leu	Ala	Gly	Ala	Leu	Gly	Gly	Pro	Gly	Gly	Val	Val	Leu	Gly	Gly	
	50					55					60					

ata	ggt	ggt	gca	ata	gca	gga	ggt	tgt	ttt	aat	ta					227
Ile	Gly	Gly	Ala	Ile	Ala	Gly	Gly	Cys	Phe	Asn						
65					70					75						

<210> 17

<211> 75

<212> PRT

<213> Divergicin structural gene;

<400> 17

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			20					25					30		

Lys	Ile	Thr	Gln	Lys	Gln	Lys	Asn	Cys	Val	Asn	Gly	Gln	Leu	Gly	Gly
		35					40					45			

Met	Leu	Ala	Gly	Ala	Leu	Gly	Gly	Pro	Gly	Gly	Val	Val	Leu	Gly	Gly
	50					55					60				

Ile	Gly	Gly	Ala	Ile	Ala	Gly	Gly	Cys	Phe	Asn					
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65

70

75

&lt;210&gt; 18

&lt;211&gt; 75

&lt;212&gt; PRT

&lt;213&gt; Divergicin structural gene

&lt;400&gt; 18

Met Lys Lys Gln Ile Leu Lys Gly Leu Val Ile Val Val Cys Leu Ser  
 1 5 10 15

Gly Ala Thr Phe Phe Ser Thr Pro Gln Gln Ala Ser Ala Ala Ala Pro  
 20 25 30

Lys Ile Thr Gln Lys Gln Lys Asn Cys Val Asn Gly Gln Leu Gly Gly  
 35 40 45

Met Leu Ala Gly Ala Leu Gly Gly Pro Gly Gly Val Val Leu Gly Gly  
 50 55 60

Ile Gly Gly Ala Ile Ala Gly Gly Cys Phe Asn  
 65 70 75

&lt;210&gt; 19

&lt;211&gt; 170

&lt;212&gt; DNA

&lt;213&gt; divergicin immunity gene;

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(168)

&lt;223&gt;

&lt;400&gt; 19

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 Met Lys Ile Lys Trp Tyr Trp Glu Ser Leu Ile Glu Thr Leu Ile Phe  
 1 5 10 15

ata att gtt ctt ctt gta ttt ttt tat aga agt tct ggt ttt tct tta 96  
 Ile Ile Val Leu Leu Val Phe Phe Tyr Arg Ser Ser Gly Phe Ser Leu  
 20 25 30

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aaa aat tta gtt tta gga agt tta ttt tat ttg ata gca att ggt ctt 144  
Lys Asn Leu Val Leu Gly Ser Leu Phe Tyr Leu Ile Ala Ile Gly Leu  
35 40 45

ttt aat tat aaa aag ata aac aaa ta 170  
Phe Asn Tyr Lys Lys Ile Asn Lys  
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<210> 20

<211> 56

<212> PRT

<213> divergicin immunity gene;

<400> 20

Met Lys Ile Lys Trp Tyr Trp Glu Ser Leu Ile Glu Thr Leu Ile Phe  
1 5 10 15

Ile Ile Val Leu Leu Val Phe Phe Tyr Arg Ser Ser Gly Phe Ser Leu  
20 25 30

Lys Asn Leu Val Leu Gly Ser Leu Phe Tyr Leu Ile Ala Ile Gly Leu  
35 40 45

Phe Asn Tyr Lys Lys Ile Asn Lys  
50 55

<210> 21

<211> 56

<212> PRT

<213> Divergicin immunity gene

<400> 21

Met Lys Ile Lys Trp Tyr Trp Glu Ser Leu Ile Glu Thr Leu Ile Phe  
1 5 10 15

Ile Ile Val Leu Leu Val Phe Phe Tyr Arg Ser Ser Gly Phe Ser Leu  
20 25 30

Lys Asn Leu Val Leu Gly Ser Leu Phe Tyr Leu Ile Ala Ile Gly Leu  
35 40 45

Phe Asn Tyr Lys Lys Ile Asn Lys

50

55

&lt;210&gt; 22

&lt;211&gt; 124

&lt;212&gt; DNA

&lt;213&gt; Divergicin signal peptide;

&lt;220&gt;

&lt;221&gt; sig\_peptide

&lt;222&gt; (1)..(123)

&lt;223&gt;

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(123)

&lt;223&gt;

&lt;400&gt; 22

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1				5					10					15		

aat	ttt	aaa	agg	ggt	ggt	tat	agt	tgt	ttg	ttt	atc	tgg	ggc	aac	att	96
Asn	Phe	Lys	Arg	Val	Gly	Tyr	Ser	Cys	Leu	Phe	Ile	Trp	Gly	Asn	Ile	
			20					25					30			

ttt	ctc	aac	acc	aca	aca	agc	ttc	tgc	t							124
Phe	Leu	Asn	Thr	Thr	Thr	Ser	Phe	Cys								
		35					40									

&lt;210&gt; 23

&lt;211&gt; 41

&lt;212&gt; PRT

&lt;213&gt; Divergicin signal peptide;

&lt;400&gt; 23

Ile	Leu	Val	Ser	Gln	Thr	Asn	Leu	Glu	Val	Gly	Ile	Tyr	Glu	Lys	Thr
1				5					10					15	

656-0007US seq listing.ST25

Asn Phe Lys Arg Val Gly Tyr Ser Cys Leu Phe Ile Trp Gly Asn Ile  
20 25 30

Phe Leu Asn Thr Thr Thr Ser Phe Cys  
35 40

<210> 24

<211> 41

<212> PRT

<213> divergicin signal peptide

<400> 24

Ile Leu Val Ser Gln Thr Asn Leu Glu Val Gly Ile Tyr Glu Lys Thr  
1 5 10 15

Asn Phe Lys Arg Val Gly Tyr Ser Cys Leu Phe Ile Trp Gly Asn Ile  
20 25 30

Phe Leu Asn Thr Thr Thr Ser Phe Cys  
35 40

<210> 25

<211> 675

<212> DNA

<213> Brochocin-C;

<400> 25

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gttacaacag atcgtgggag gttacagttc aaaagattgt ctaaaagata ttggtaaagg	180
aattggtgct ggtacagtag ctggggcagc cggcgggtggc ctagctgcag gattaggtgc	240
tatcccagga gcattcggtg gagcacattt tggagtaatc ggcggatctg ccgcatgcat	300
tggtggatta ttaggtaact aggaggttat atttatgaaa aaagaactat tgaataaaaa	360
tgaaatgagt agaattatcg gcggcaaaat aaattgggga aatgttggcg gttcttgtgt	420
tggagggtgca gtaattggag gcgccctcgg tggactaggt ggagctggcg gaggttgc	480
tacaggagct atcggagta tttgggatca atggtaaaaa ctatactatt ttcggttgta	540
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<210> 26

<211> 233

<212> DNA

<213> Brochocin-C peptide A;

<220>

<221> CDS

<222> (1)..(231)

<223>

<220>

<221> sig\_peptide

<222> (1)..(54)

<223>

<400> 26

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 1 5 10 15

gga ggt tac agt tca aaa gat tgt cta aaa gat att ggt aaa gga att 96  
 Gly Gly Tyr Ser Ser Lys Asp Cys Leu Lys Asp Ile Gly Lys Gly Ile  
 20 25 30

ggt gct ggt aca gta gct ggg gca gcc ggc ggt ggc cta gct gca gga 144  
 Gly Ala Gly Thr Val Ala Gly Ala Ala Gly Gly Gly Leu Ala Ala Gly  
 35 40 45

tta ggt gct atc cca gga gca ttc gtt gga gca cat ttt gga gta atc 192  
 Leu Gly Ala Ile Pro Gly Ala Phe Val Gly Ala His Phe Gly Val Ile  
 50 55 60

ggc gga tct gcc gca tgc att ggt gga tta tta ggt aac ta 233  
 Gly Gly Ser Ala Ala Cys Ile Gly Gly Leu Leu Gly Asn  
 65 70 75

<210> 27

<211> 77

<212> PRT

&lt;213&gt; Brochocin-C peptide A;

&lt;400&gt; 27

Met His Lys Val Lys Lys Leu Asn Asn Gln Glu Leu Gln Gln Ile Val  
 1 5 10 15

Gly Gly Tyr Ser Ser Lys Asp Cys Leu Lys Asp Ile Gly Lys Gly Ile  
 20 25 30

Gly Ala Gly Thr Val Ala Gly Ala Ala Gly Gly Gly Leu Ala Ala Gly  
 35 40 45

Leu Gly Ala Ile Pro Gly Ala Phe Val Gly Ala His Phe Gly Val Ile  
 50 55 60

Gly Gly Ser Ala Ala Cys Ile Gly Gly Leu Leu Gly Asn  
 65 70 75

&lt;210&gt; 28

&lt;211&gt; 77

&lt;212&gt; PRT

&lt;213&gt; brochocin C, peptide A

&lt;400&gt; 28

Met His Lys Val Lys Lys Leu Asn Asn Gln Glu Leu Gln Gln Ile Val  
 1 5 10 15

Gly Gly Tyr Ser Ser Lys Asp Cys Leu Lys Asp Ile Gly Lys Gly Ile  
 20 25 30

Gly Ala Gly Thr Val Ala Gly Ala Ala Gly Gly Gly Leu Ala Ala Gly  
 35 40 45

Leu Gly Ala Ile Pro Gly Ala Phe Val Gly Ala His Phe Gly Val Ile  
 50 55 60

Gly Gly Ser Ala Ala Cys Ile Gly Gly Leu Leu Gly Asn  
 65 70 75

&lt;210&gt; 29

&lt;211&gt; 182

&lt;212&gt; DNA

656-0007US seq listing.ST25

<213> Brochocin-C peptide B;

<220>

<221> CDS

<222> (1)..(177)

<223>

<220>

<221> sig\_peptide

<222> (1)..(51)

<223>

<400> 29

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1			5						10					15		

ggc	aaa	ata	aat	tgg	gga	aat	ggt	ggc	ggt	tct	tgt	ggt	gga	ggt	gca	96
Gly	Lys	Ile	Asn	Trp	Gly	Asn	Val	Gly	Gly	Ser	Cys	Val	Gly	Gly	Ala	
			20					25					30			

gta	att	gga	ggc	gcc	ctc	ggt	gga	cta	ggt	gga	gct	ggc	gga	ggt	tgc	144
Val	Ile	Gly	Gly	Ala	Leu	Gly	Gly	Leu	Gly	Gly	Ala	Gly	Gly	Gly	Cys	
		35				40						45				

att	aca	gga	gct	atc	gga	agt	att	tgg	gat	caa	tggt					182
Ile	Thr	Gly	Ala	Ile	Gly	Ser	Ile	Trp	Asp	Gln						
	50					55										

<210> 30

<211> 59

<212> PRT

<213> Brochocin-C peptide B;

<400> 30

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1			5						10					15		

Gly	Lys	Ile	Asn	Trp	Gly	Asn	Val	Gly	Gly	Ser	Cys	Val	Gly	Gly	Ala	
			20					25					30			



Val Ile Gly Gly Ala Leu Gly Gly Leu Gly Gly Ala Gly Gly Gly Cys  
 35 40 45

Ile Thr Gly Ala Ile Gly Ser Ile Trp Asp Gln  
 50 55

<210> 31

<211> 60

<212> PRT

<213> Brochocin-C, peptide B

<400> 31

Met Lys Lys Glu Leu Leu Asn Lys Asn Glu Met Ser Arg Ile Ile Gly  
 1 5 10 15

Gly Lys Ile Asn Trp Gly Asn Val Gly Gly Ser Cys Val Gly Gly Ala  
 20 25 30

Val Ile Gly Gly Ala Leu Gly Gly Leu Gly Gly Ala Gly Gly Gly Cys  
 35 40 45

Ile Thr Gly Ala Ile Gly Ser Ile Trp Asp Gln Trp  
 50 55 60

<210> 32

<211> 161

<212> DNA

<213> Brochocin-C immunity peptide;

<220>

<221> CDS

<222> (1)..(159)

<223>

<400> 32

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 1 5 10 15

48

tgt aac ttt tta ata aaa aaa gat gtg tct tca aaa aaa aaa tta ttt  
 Cys Asn Phe Leu Ile Lys Lys Asp Val Ser Ser Lys Lys Lys Leu Phe

96

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20	25	30	
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Leu Thr Gly Ser Ile Ala Val	Phe Leu Ile Ile Tyr Asp	Phe Leu Trp	
35	40	45	
att ata ttc tct aac ta			161
Ile Ile Phe Ser Asn			
50			

<210> 33

<211> 53

<212> PRT

<213> Brochocin-C immunity peptide;

<400> 33

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1 5 10 15
Cys Asn Phe Leu Ile Lys Lys Asp Val Ser Ser Lys Lys Lys Leu Phe
20 25 30
Leu Thr Gly Ser Ile Ala Val Phe Leu Ile Ile Tyr Asp Phe Leu Trp
35 40 45
Ile Ile Phe Ser Asn
50

<210> 34

<211> 53

<212> PRT

<213> Brochocin-C immunity peptide

<400> 34

Met Val Lys Thr Ile Leu Phe Ser Val Val Ile Ser Phe Val Ala Leu
1 5 10 15
Cys Asn Phe Leu Ile Lys Lys Asp Val Ser Ser Lys Lys Lys Leu Phe
20 25 30
Leu Thr Gly Ser Ile Ala Val Phe Leu Ile Ile Tyr Asp Phe Leu Trp
35 40 45

Ile Ile Phe Ser Asn  
50

<210> 35

<211> 2226

<212> DNA

<213> Enterocin 900 operon;

<400> 35

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taatttgcta tgtcagttcg atcaatacca ttgcatgaa agtacagcta taagccaatc	240
acacctaacc tactcttaat cgtataatga ttccagttag caaggctttt aatactcatg	300
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<210> 36

<211> 215

<212> DNA

<213> Enterocin 900 peptide;

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<221> CDS

<222> (1)..(213)

<223>

<220>

<221> sig\_peptide

<222> (1)..(54)

<223>

<400> 36

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1          5          10          15

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656-0007US seq listing.ST25

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Gly Gly Glu Asn Asp His Arg Met Pro Asn Glu Leu Asn Arg Pro Asn  
20 25 30

aac tta tct aaa ggt gga gca aaa tgt ggt gct gca att gct ggg gga 144  
Asn Leu Ser Lys Gly Gly Ala Lys Cys Gly Ala Ala Ile Ala Gly Gly  
35 40 45

tta ttt gga atc cca aaa gga cca cta gca tgg gct gct ggg tta gca 192  
Leu Phe Gly Ile Pro Lys Gly Pro Leu Ala Trp Ala Ala Gly Leu Ala  
50 55 60

aat gta tac tct aaa tgc aac ta 215  
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65 70

<210> 37

<211> 71

<212> PRT

<213> Enterocin 900 peptide;

<400> 37

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1 5 10 15

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20 25 30

Asn Leu Ser Lys Gly Gly Ala Lys Cys Gly Ala Ala Ile Ala Gly Gly  
35 40 45

Leu Phe Gly Ile Pro Lys Gly Pro Leu Ala Trp Ala Ala Gly Leu Ala  
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<213> Enterocin 900 peptide

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Met Gln Asn Val Lys Glu Leu Ser Thr Lys Glu Met Lys Gln Ile Ile  
Page 29

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1                      5                      10                      15  
 Gly Gly Glu Asn Asp His Arg Met Pro Asn Glu Leu Asn Arg Pro Asn  
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 Asn Leu Ser Lys Gly Gly Ala Lys Cys Gly Ala Ala Ile Ala Gly Gly  
                     35                      40                      45  
 Leu Phe Gly Ile Pro Lys Gly Pro Leu Ala Trp Ala Ala Gly Leu Ala  
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                     20                      25                      30  
 Val Ala Gly Gly Ile Gly Ala Ala Ala Gly Gly Val Ala Gly Gly Ala  
                     35                      40                      45

656-0007US seq listing.ST25

Ile Tyr Asp Tyr Ala Ser Thr His Lys Pro Asn Pro Ala Met Ser Pro  
50 55 60

Ser Gly Leu Gly Gly Thr Ile Lys Gln Lys Pro Glu Gly Ile Pro Ser  
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Ala Ile Tyr Asp Tyr Ala Ser Thr His Lys Pro Asn Pro Ala Met Ser  
35 40 45

Pro Ser Gly Leu Gly Gly Thr Ile Lys Gln Lys Pro Glu Gly Ile Pro  
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Ser Glu Ala Trp Asn Tyr Ala Ala Gly Arg Leu Cys Asn Trp Ser Pro  
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656-0007US seq listing.ST25

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5 10 15 20

tct tat ggc aat ggt gtt tat tgt aac aaa gag aaa tgt tgg gta aac 210  
Ser Tyr Gly Asn Gly Val Tyr Cys Asn Lys Glu Lys Cys Trp Val Asn  
25 30 35



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gct tct agt tta gca gga atg gga cat taaagaggta tctagtt atg ata 308  
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aaa gat gaa aaa ata aat aaa atc tat gct tta gtt aag agc gca ctt 356  
 Lys Asp Glu Lys Ile Asn Lys Ile Tyr Ala Leu Val Lys Ser Ala Leu  
 65 70 75

gat aat acg gat gtt aag aat gat aaa aaa ctt tct tta ctt ctt atg 404  
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 80 85 90 95

aga ata caa gaa aca tca att aat gga gaa cta ttt tac gat tat aaa 452  
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 100 105 110

aaa gaa tta cag cca gct att agt atg tac tct att caa cat aac ttt 500  
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 115 120 125

cgg gtt cct gac gat cta gta aaa ctg tta gca tta gtt caa aca cct 548  
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 130 135 140

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 20 25 30

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Ile Gly Gly Trp Ala Ser Ser Leu Ala Gly Met Gly His  
 Page 33

50

55

60

&lt;210&gt; 43

&lt;211&gt; 88

&lt;212&gt; PRT

&lt;213&gt; carnobacteriocin BM1;

&lt;400&gt; 43

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Ala Leu Asp Asn Thr Asp Val Lys Asn Asp Lys Lys Leu Ser Leu Leu  
 20 25 30

Leu Met Arg Ile Gln Glu Thr Ser Ile Asn Gly Glu Leu Phe Tyr Asp  
 35 40 45

Tyr Lys Lys Glu Leu Gln Pro Ala Ile Ser Met Tyr Ser Ile Gln His  
 50 55 60

Asn Phe Arg Val Pro Asp Asp Leu Val Lys Leu Leu Ala Leu Val Gln  
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Thr Pro Lys Ala Trp Ser Gly Phe  
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&lt;211&gt; 61

&lt;212&gt; PRT

&lt;213&gt; Carnobacterium B2

&lt;400&gt; 44

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Gly Gly Ala Ile Ser Tyr Gly Asn Gly Val Tyr Cys Asn Lys Glu Lys  
 20 25 30

Cys Trp Val Asn Lys Ala Glu Asn Lys Gln Ala Ile Thr Gly Ile Val  
 35 40 45

Ile Gly Gly Trp Ala Ser Ser Leu Ala Gly Met Gly His  
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<210> 45

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<212> PRT

<213> Carnobacterium B2

<400> 45

Met Ile Lys Asp Glu Lys Ile Asn Lys Ile Tyr Ala Leu Val Lys Ser  
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Ala Leu Asp Asn Thr Asp Val Lys Asn Asp Lys Lys Leu Ser Leu Leu  
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Leu Met Arg Ile Gln Glu Thr Ser Ile Asn Gly Glu Leu Phe Tyr Asp  
 35 40 45

Tyr Lys Lys Glu Leu Gln Pro Ala Ile Ser Met Tyr Ser Ile Gln His  
 50 55 60

Asn Phe Arg Val Pro Asp Asp Leu Val Lys Leu Leu Ala Leu Val Gln  
 65 70 75 80

Thr Pro Lys Ala Trp Ser Gly Phe  
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<210> 46

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656-0007US seq listing.ST25

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tttatttcatt ttatgaattc aaataccctg gttcaagatg tattttccaa aaaaatgttc 180

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Gly Val Asn Tyr Gly Asn Gly Val Ser Cys Ser Lys Thr Lys Cys Ser 20 25 30	
gtt aac tgg gga caa gcc ttt caa gaa aga tac aca gct gga att aac	382
Val Asn Trp Gly Gln Ala Phe Gln Glu Arg Tyr Thr Ala Gly Ile Asn 35 40 45	
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Ser Phe Val Ser Gly Val Ala Ser Gly Ala Gly Ser Ile Gly Arg Arg 50 55 60 65	
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Val Lys Ala Asn Glu Phe Leu Ser Lys Leu Val Val Gln Cys Ala Gly 90 95 100	
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Lys Leu Thr Ala Ser Asn Ser Glu Asn Ser Tyr Ile Glu Val Ile Ser 105 110 115	
ttg cta tct agg ggt att tct agt tat tat tta tcc cat aaa cgt ata	676
Leu Leu Ser Arg Gly Ile Ser Ser Tyr Tyr Leu Ser His Lys Arg Ile 120 125 130	
att cct tca agt atg tta act ata tat act caa ata caa aag gat ata	724
Ile Pro Ser Ser Met Leu Thr Ile Tyr Thr Gln Ile Gln Lys Asp Ile 135 140 145 150	
aaa aac ggg aat att gac acc gaa aaa tta agg aaa tat gag ata gca	772
Lys Asn Gly Asn Ile Asp Thr Glu Lys Leu Arg Lys Tyr Glu Ile Ala 155 160 165	
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Lys Gly Leu Met Ser Val Pro Tyr Ile Tyr Phe 170 175	
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ctatataaaa tagaactact gatttaaagt atttataaga atataaagta gcaaataaca	945
tgatagacac aattaaggag cgacatttta tggaaaattt gaaatggtat tcgggcggga	1005
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656-0007US seq listing.ST25

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190 195 200	
ctt gaa gaa ttg gaa caa gca aat gct gct gtt cca att ata tta ggc	1153
Leu Glu Glu Leu Glu Gln Ala Asn Ala Ala Val Pro Ile Ile Leu Gly	
205 210 215 220	
cgt atg aac ata gat atc tct aca gca atc aga aaa gat ggt gtt act	1201
Arg Met Asn Ile Asp Ile Ser Thr Ala Ile Arg Lys Asp Gly Val Thr	
225 230 235	
tta tca gaa att cag tct aaa aaa tta aaa gag ctg att tca ata tcc	1249
Leu Ser Glu Ile Gln Ser Lys Lys Leu Lys Glu Leu Ile Ser Ile Ser	
240 245 250	
tat att aaa tat ggc tat taatttagta ttaataacag tgtaggattg	1297
Tyr Ile Lys Tyr Gly Tyr	
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656-0007US seq listing.ST25

Ser Val Asn Trp Gly Gln Ala Phe Gln Glu Arg Tyr Thr Ala Gly Ile  
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<210> 48

<211> 111

<212> PRT

<213> carnobacterium B2 operon;

<400> 48

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20 25 30

Gln Cys Ala Gly Lys Leu Thr Ala Ser Asn Ser Glu Asn Ser Tyr Ile  
35 40 45

Glu Val Ile Ser Leu Leu Ser Arg Gly Ile Ser Ser Tyr Tyr Leu Ser  
50 55 60

His Lys Arg Ile Ile Pro Ser Ser Met Leu Thr Ile Tyr Thr Gln Ile  
65 70 75 80

Gln Lys Asp Ile Lys Asn Gly Asn Ile Asp Thr Glu Lys Leu Arg Lys  
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Tyr Glu Ile Ala Lys Gly Leu Met Ser Val Pro Tyr Ile Tyr Phe  
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<210> 49

<211> 81

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<213> carnobacterium B2 operon;

<400> 49

656-0007US seq listing.ST25

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20 25 30

Gln Ala Asn Ala Ala Val Pro Ile Ile Leu Gly Arg Met Asn Ile Asp  
35 40 45

Ile Ser Thr Ala Ile Arg Lys Asp Gly Val Thr Leu Ser Glu Ile Gln  
50 55 60

Ser Lys Lys Leu Lys Glu Leu Ile Ser Ile Ser Tyr Ile Lys Tyr Gly  
65 70 75 80

Tyr

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<211> 66

<212> PRT

<213> Carnobacterium B2 operon

<400> 50

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20 25 30

Ser Val Asn Trp Gly Gln Ala Phe Gln Glu Arg Tyr Thr Ala Gly Ile  
35 40 45

Asn Ser Phe Val Ser Gly Val Ala Ser Gly Ala Gly Ser Ile Gly Arg  
50 55 60

Arg Pro  
65

<210> 51

<211> 111

<212> PRT



&lt;213&gt; Carnobacterium B2 operon

&lt;400&gt; 51

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 20 25 30

Gln Cys Ala Gly Lys Leu Thr Ala Ser Asn Ser Glu Asn Ser Tyr Ile  
 35 40 45

Glu Val Ile Ser Leu Leu Ser Arg Gly Ile Ser Ser Tyr Tyr Leu Ser  
 50 55 60

His Lys Arg Ile Ile Pro Ser Ser Met Leu Thr Ile Tyr Thr Gln Ile  
 65 70 75 80

Gln Lys Asp Ile Lys Asn Gly Asn Ile Asp Thr Glu Lys Leu Arg Lys  
 85 90 95

Tyr Glu Ile Ala Lys Gly Leu Met Ser Val Pro Tyr Ile Tyr Phe  
 100 105 110

&lt;210&gt; 52

&lt;211&gt; 81

&lt;212&gt; PRT

&lt;213&gt; Carnobacterium B2 operon

&lt;400&gt; 52

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 20 25 30

Gln Ala Asn Ala Ala Val Pro Ile Ile Leu Gly Arg Met Asn Ile Asp  
 35 40 45

Ile Ser Thr Ala Ile Arg Lys Asp Gly Val Thr Leu Ser Glu Ile Gln  
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Ser Lys Lys Leu Lys Glu Leu Ile Ser Ile Ser Tyr Ile Lys Tyr Gly

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Tyr

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<212> DNA

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<210> 54

<211> 36

<212> DNA

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<210> 56

<211> 20

<212> DNA

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<210> 61

<211> 76

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656-0007US seq listing.ST25

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<210> 64  
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 <223> standard\_name= "any base"

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<223> standard\_name= "any base"

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<210> 66

<211> 7

<212> PRT

<213> Carnobacterium sp.

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<210> 67

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<223> T or A

<400> 67

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Thr Gly Cys Cys Xaa Ala Ala Thr Gly Ala Ala Cys Thr Xaa Ala Ala  
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<210> 68

<211> 61

<212> PRT

<213> Leucocin A

656-0007US seq listing.ST25

<400> 68

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20 25 30

Cys Thr Lys Ser Gly Cys Ser Val Asn Trp Gly Glu Ala Glu Ser Ala  
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Gly Val His Arg Leu Ala Asn Gly Gly Asn Gly Phe Trp  
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<210> 69

<211> 36

<212> PRT

<213> Mesenteriocin Y105

<400> 69

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Gly Asn Gly Phe  
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<210> 70

<211> 41

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<213> Sakacin P

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<400> 70

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Asp Trp Gly Thr Ala Ile Gly Asn Ile Gly Asn Asn Ala Ala Ala Asn  
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Xaa Ala Thr Gly Xaa Asn Ala Xaa Xaa  
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<213> Pediocin PA1

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1 5 10 15

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20 25 30



656-0007US seq listing.ST25

Ser Val Asp Trp Gly Lys Ala Thr Thr Cys Ile Ile Asn Asn Gly Ala  
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<210> 72

<211> 66

<212> PRT

<213> Carnobacteriocin B2

<400> 72

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20 25 30

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35 40 45

Asn Ser Phe Val Ser Gly Val Ala Ser Gly Ala Gly Ser Ile Gly Arg  
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Arg Pro  
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<210> 73

<211> 61

<212> PRT

<213> Carnobacteriocin BM1

<400> 73

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1 5 10 15

Gly Gly Ala Ile Ser Tyr Gly Asn Gly Val Tyr Cys Asn Lys Glu Lys  
20 25 30

Cys Trp Val Asn Lys Ala Glu Asn Lys Gln Ala Ile Thr Gly Ile Val  
Page 49

35

Ile Gly Gly Trp Ala Ser Ser Leu Ala Gly Met Gly His  
50 55 60

<210> 74

<211> 59

<212> PRT

<213> Sakacin A

<400> 74

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1 5 10 15

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20 25 30

Cys Trp Val Asn Arg Gly Glu Ala Thr Gln Ser Ile Ile Gly Gly Met  
35 40 45

Ile Ser Gly Trp Ala Ser Gly Leu Ala Gly Met  
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<210> 75

<211> 31

<212> PRT

<213> Curvacin A

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